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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,205	11/20/2003	Stefan Felter	2380-796	6217

23117 7590 02/05/2007  
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ARLINGTON, VA 22203

EXAMINER
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NGUYEN, MY XUAN

ART UNIT	PAPER NUMBER
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2617

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/05/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.



<b>Office Action Summary</b>	Application No. 10/717,205	Applicant(s) FELTER, STEFAN	
	Examiner My X. Nguyen	Art Unit 2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 November 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |



### DETAILED ACTION

This action is in response to applicant's amendment filed on 11/06/2006. Claims 1-34 are now pending in the present application. This action is made **final**.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-34 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 6,141,393 (Thomas et al., hereinafter Thomas).

Regarding claims 1 and 16, Thomas discloses the claimed antenna array comprising an antenna which provides signals for each of successive sets of pilot data (Col. 3 Lines 15-17 & Col. 5 Lines 1-6) and further discloses the claimed joint searcher and channel estimator arranged for essentially concurrently considering the plural signals for the respective successive sets of pilot data for determining both a time of arrival and channel coefficient (Col. 5 Lines 16-59).



Regarding claims 2 and 17, Thomas discloses the claimed time of arrival and the channel coefficient are essentially concurrently determined by the joint searcher and channel estimator (Col. 5 Lines 16-59).

Regarding claims 3 and 18, Thomas discloses the claimed detector which utilizes the channel coefficient and the time of arrival to provide a symbol estimate (Col. 7 Lines 54-63 & Col. 8 Lines 12-22).

Regarding claims 4 and 19, Thomas discloses the wireless communication receiver is a mobile terminal (Col. 4 Lines 55-57 & Col. 6 Lines 49-51).

Regarding claims 5 and 20, Thomas discloses the wireless communication receiver is a network node (Col. 4 Lines 55-57 & Col. 6 Lines 49-51).

Regarding claims 6, 12 and 27, Thomas discloses the claimed antenna signal matrix in which a complex value indicative of the signal received in a sampling window is stored as a function of a sampling window time index and the pilot set index; a correlator which uses the antenna signal matrix to generate a correlator output; a correlator output analyzer which uses the correlator output to generate the time of arrival and the channel coefficient (Col. 4 Lines 59-67, Col. 5 Lines 1-12 & Col. 8 Lines 1-67).



Regarding claims 7 and 22, Thomas discloses the claimed performing the calculation the correlator considers a dimensional receptivity vector formed from the antenna signal matrix with respect to a sampling window time index for the plural sets of pilot data, the dimensional receptivity vector having a frequency related to a difference between phase components of complex values of the dimensional receptivity vector, there being plural possible frequencies for the dimensional receptivity vector, the plural possible frequencies being represented by a frequency index; and wherein for each combination of plural possible frequencies and plural time indexes, the correlator calculates:  $Y(n,t) = \text{FFT}(n,X(:,t))$  wherein  $t$  is the sampling window time index;  $X(:,t)$  is the complex antenna matrix; and  $n$  is the frequency index (Col. 11 Lines 28-67, Col. 12 Lines 1-67, Col. 13 1-67 & Col. 14 1-65)

Regarding claims 8 and 23, Thomas discloses the claimed each combination of plural possible frequencies and plural time indexes, the correlator calculates:  $Y(n,t) = \sum C_j * \text{FFT}(n,X(:,t))$ ,  $j = 1,K$  wherein  $C_j$  is a coding sequence symbol value  $j$  and  $K$  is a length of the coding sequence. (Col. 11 Lines 28-67, Col. 12 Lines 1-67, Col. 13 1-67 & Col. 14 1-65)

Regarding claims 9, 13 and 28, Thomas discloses the claimed each of the plural possible frequencies corresponds to a doppler shift (Fig. 1).



Art Unit: 2617

Regarding claims 10, 14, 15, 24, 25, 29 and 30, Thomas discloses the claimed correlator output comprises  $Y(n,t)$ , and wherein the analyzer determines a maximum absolute value  $|Y(n,t)|_{\max}$ , wherein the analyzer uses a sampling window time index  $t_{\max}$  at which  $|Y(n,t)|_{\max}$  occurs to determine the time of arrival of an arriving wavefront; and wherein the analyzer uses the a frequency index  $n_{\max}$  at which  $|Y(n,t)|_{\max}$  to determine the doppler shift. (Fig. 1, Col. 11 Lines 28-67, Col. 12 Lines 1-67, Col. 13 1-67 & Col. 14 1-65).

Regarding claims 11 and 26, Thomas discloses the claimed correlator output comprises  $Y(n,t)$ , and wherein the analyzer determines a maximum absolute value  $|Y(n,t)|_{\max}$ , wherein the analyzer obtains an amplitude for an arriving wavefront by dividing  $|Y(n,t)|_{\max}$  by a number of sets of pilot data in the series (Col. 11 Lines 28-67, Col. 12 Lines 1-67, Col. 13 1-67 & Col. 14 1-65).

Regarding claim 21, Thomas discloses the claimed storing a complex value indicative of the signal received in a sampling window an antenna signal matrix as a function of a sampling window time index and the pilot set index; performing a Fast Fourier Transformation (FFT) calculation to generate a correlator output; using the correlator output to generate the time of arrival and the channel coefficient (Col. 4 Lines 59-67, Col. 5 Lines 1-12, Col. 8 Lines 1-67 & Col. 9 Lines 9-14).



Regarding claims 31 and 33, Thomas discloses the claimed joint searcher and channel estimator is arranged for essentially concurrently considering the plural signals for the respective successive sets of pilot data for determining both a time of arrival and channel coefficient by essentially concurrently operating upon a two dimensional functionally dependent matrix, the signals being stored in the matrix as a function of two different indices, a first index being a time index of a sampling window employed for each of the sets of pilot data and a second index indicating for which one of the successive sets of pilot data the signal was obtained (Col. 3 Lines 15-17, Col. 5 Lines 1-6 & 16-59 & Col. 8 Lines 1-67).

Regarding claims 32 and 34, Thomas discloses the claimed joint searcher and channel estimator is arranged for essentially concurrently considering the plural signals for the respective successive sets of pilot data for determining both a time of arrival and channel coefficient by essentially concurrently operating upon a matrix which stores signals which are dimensionally differentiated by being acquired in differing frame transmission intervals (Col. 3 Lines 15-17, Col. 5 Lines 1-6 & 16-59 & Col. 8 Lines 1-67).

### ***Double Patenting***

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory



Art Unit: 2617

obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-34 are provisionally rejected on the ground of nonstatutory double patenting over claims 1, 4, 8-13, 17-20, 24-27, 29, 33-36, 39, 41-43, and 47-49 of copending Application No. 10/717,313. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows:

Claim 1 of the current Application (10/717,205) recites similar limitations to claim 1 of copending Application No. 10/717,313.



Art Unit: 2617

Claim 2 of the current Application (10/717,205) recites similar limitations to claim 4 of copending Application No. 10/717,313.

Claims 3-8 of the current Application (10/717,205) recites similar limitations to claims 8-13, respectively, of copending Application No. 10/717,313.

Claims 9-12 of the current Application (10/717,205) recites similar limitations to claims 17-20, respectively, of copending Application No. 10/717,313.

Claims 13-16 of the current Application (10/717,205) recites similar limitations to claims 24-27, respectively, of copending Application No. 10/717,313.

Claim 17 of the current Application (10/717,205) recites similar limitations to claim 29 of copending Application No. 10/717,313.

Claim 18 of the current Application (10/717,205) recites similar limitations to claim 33 of copending Application No. 10/717,313.

Claims 19 and 20 of the current Application (10/717,205) recite similar limitations to claims 4 and 5, respectively, of copending Application No. 10/717,313.



Claims 21-23 of the current Application (10/717,205) recites similar limitations to claims 34-36, respectively, of copending Application No. 10/717,313.

Claim 24 of the current Application (10/717,205) recites similar limitations to claim 39 of copending Application No. 10/717,313.

Claims 25-27 of the current Application (10/717,205) recites similar limitations to claims 41-43, respectively, of copending Application No. 10/717,313.

Claims 28-30 of the current Application (10/717,205) recites similar limitations to claims 47-49, respectively, of copending Application No. 10/717,313.

Claims 31-34 of the current Application (10/717,205) recites similar limitations to claims 11 and 34, respectively, of copending Application No. 10/717,313.

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.



***Response to Arguments***

4. Applicant's arguments with respect to claims 1-34 have been considered but are moot in view of the new ground(s) of rejection.

Applicant should note claims 1-34 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 6,141,393 (Thomas et al., hereinafter Thomas).

Detail of the rejection is found above in the current Office Action dated 02/02/2007.

***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of



Art Unit: 2617

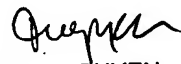
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to My X. Nguyen whose telephone number is (571) 272-2835. The examiner can normally be reached on Monday through Friday at 8:00AM to 4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duc Nguyen can be reached on (571) 272-7503. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

M.X.N.  
02/02/2007

  
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